Original Article

Colorectal Cancer Trends and Characteristics in Tabuk, Saudi Arabia

Salah Alghamdi[1*]
[1]*Department of Surgery, Faculty of Medicine, University of Tabuk, Kingdom of Saudi Arabia.*

Abstract

Colorectal cancer is the third most common cause of cancer in the developed world and the fourth in developing countries. To the best of our knowledge, no researchers have assessed colorectal cancer in Tabuk Region, Saudi Arabia. Therefore, we went ahead to investigate the clinical and pathological pattern of colorectal cancer in Tabuk. A retrospective cohort was conducted at King Fahad Specialist Hospital (KFSH) Tabuk City from January 2023 to May 2023. All the adult patient records (Saudi and non-Saudi) from January 2019 to December 2020 were approached. An Excel checklist with coding was used to gather the information. including sociodemographic data, histopathology, and the biopsy site, grade, and if malignant or benign. Out of 46 patients with colorectal cancer (60.9% men, and 78.3% Saudis), the patient's ages ranged from 36-92 years, and the majority of females (77.8%) were younger than 60 years. In this survey, the most common malignancy was the right side of the colon (39.1%) followed by recto-sigmoid (23.9%), and rectal cancer (19.6%). Adenocarcinoma was the commonest histopathological pattern (84.8%). Stage II was observed in 56.5%, stage I in 6.5%, and stage III was evident in 4.4%. Colorectal cancer was the second most common cancer in Tabuk City. The patients were younger and a tendency towards proximal shift was observed. Males were more affected and were older than women. Adenocarcinoma was the commonest histopathological finding, the majority were carcinoma in situ, and stage II was the commonest presentation.

Keywords: *Colorectal cancer, Pattern, Tabuk, Saudi Arabia*

Introduction

American Cancer Society defines colorectal cancer as cancer that occurs in the colon or rectum. The disease is rated the third after breast and lung cancer and the fourth cause of cancer death over the globe.[1] Colorectal cancer is rising worldwide displacing bronchial and breast cancers in some geographical areas, it is the most common cancer in Saudi males and the second among females in Saudi Arabia. Furthermore, late presentation with lymph nodes and distant metastasis are common.[2] Plausible explanations could be a lack of awareness and fear of colonoscopy as a screening method.[3] The symptoms of colorectal cancer can range widely, including weight loss, bleeding in the rectum, distant metastases, fatigue, iron deficiency anemia, and altered bowel habits. The most frequent histological type is adenocarcinoma.[4] Risk factors for colorectal cancer are lack of physical activity, an unfriendly diet with low fiber and high meat, smoking, and alcohol consumption, in addition to the non-modifiable risk factors including age, sex, and prior inflammatory bowel disease especially long-standing ulcerative colitis.[5]

Previous literature showed great gender variation in prevalence, site of cancer, screening program, and types of treatment.[6] A meta-analysis showed a better survival of colorectal cancer among women.[7] In addition, postmenopausal women are more likely to develop right-sided colonic malignancy; estrogen receptors might play a protective or suppressive role.[8] The gender differences in colorectal cancer among the elderly age group narrowed in the previous decades. However, the differences widen among those < 60 years.[9, 10] Gender differences are mainly observed in right-sided colonic cancer. Knowledge regarding the factors associated with gender differences (including estrogens) and their pathways might help in the prevention and distribution of health resources.[11] The current research aimed to assess the clinical, histopathological, and gender differences in colorectal cancer in Tabuk City, Saudi Arabia.

Materials and Methods

This retrospective cohort was conducted at

Address for correspondence:
Salah Alghamdi,
Department of Surgery, Faculty of Medicine, University of Tabuk, Kingdom of Saudi Arabia.
E-mail: s.alghamdi@ut.edu.sa

Access this article online

Website: www.ccij-online.org

DOI: 10.51847/Sqv24bpO0n

Quick Response Code:

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: Support_reprints@ccij-online.org

How to cite this article: Alghamdi S. Colorectal Cancer Trends and Characteristics in Tabuk, Saudi Arabia. Clin Cancer Investig J. 2023;12(6):6-9. https://doi.org/10.51847/Sqv24bpO0n

King Fahad Specialist Hospital (KFSH) in Tabuk City. Tabuk City's population according to the 2021 estimate was 667,000. The city is the Capital of the region (North West of the Kingdom). The hospital was randomly selected from the three major Hospitals and accepted referrals from other hospitals in the region and primary healthcare centers. The patient's records from January 2019 to December 2020 were approached confidentially and with strict adherence to the Helsinki Declaration. Data collection was started from January 2023 to May 2023.

Inclusion and exclusion criteria

Only adults are included, Saudi and non-Saudi, and children with malignancy were excluded.

The information was kept anonymous and confidentiality was restored. All the information was collected using an Excel sheet with coding. Information collected included Age, sex, residence, and occupation. The surgical and histopathological notes were reviewed to determine the biopsy site, histopathology report, grade, and if malignant or benign. The total sample was three hundred fifty-four. Of them, forty-six were from the colon.

Data analysis

The data were entered into an Excel sheet and they were presented as percentages and mean± SD. The Statistical Package for Social Sciences (IBM, SPSS, version 20, New York) was used for data analysis.

Results and Discussion

Out of 46 patients with colorectal cancer (60.9% men, and 78.3% Saudis), the patient's ages ranged from 36-92 years, the majority of females (77.8%) were younger than 60 years, the patients were referred from surgery in 45.6%, Medicine in 11%, and histology in 43.4%, this pattern implies that all the patients were symptomatic at presentation and no detection by screening. More than half of patients were married (54.3%) and only a minority were single (8.7%) **(Table 1)**.

Table 1. The basic character of patients with colorectal cancer in Tabuk City

Character	No%
Age range 63-92 years	
Age ≤ 60 years	23 (50%)
Females ≤ 60 years	14 (77.8%)
Sex	
Males	28 (60.9%)
Females	18 (39.1%)
Referred from	
Surgery	21 (45.6%)
Medicine	05 (11%)
Histology	20 (43.4%)
Nationality	
Saudi	36 (78.3%)
Non-Saudi	10 (21.7%)
Marital status	
Married	25 (54.3%)
Single	04 (8.7%)
Unknown	17 (37%)
Residence inside Tabuk City	46 (100%)

In this survey, the most common malignancy was in the right side of the colon (39.1%) followed by recto-sigmoid (23.9%), and rectal cancer (19.6%). Adenocarcinoma was the most common histopathological pattern (84.8%) and the majority were in situ (84.8%). Regarding the stage of cancer, type II was observed in 56.5%, stage I in 6.5%, and stage III was evident in 4.4% **(Table 2)**.

Table 2. The pattern of colorectal malignancy in Tabuk City

Percentage of colorectal cancer	46 (13%)
Site	
Appendix	04 (8.7%)
Rectum	09 (19.6%)
Sigmoid	10 (21.7%)
Recto-sigmoid	01 (2.2%)
Descending colon	04 (8.7%)
The right side of the colon (33% women)	18 (39.1%
Histopathology	
Adenocarcinoma	39 (84.8%)
Carcinoid	03 (6.5%)
Other	04 (8.7%)
Malignancy grade	
Stage I	03 (6.5%)
Stage II	26 (56.5%)
Stage III	02 (4.4%)
Unknown	15 (32.6%)
Extent	
In situ	39 (84.8%)
Distant and regional metastasis	07 (5.2)

In the present study, 13% of malignancies in Tabuk City were colorectal putting this serious disease as the most common malignancy in males and the second in females. The current findings supported previous findings.[2] Colorectal cancer in Tabuk City is the second cancer in both sexes combined; the findings were similar to a previous study in Saudi Arabia.[12] However, the current findings were different from other developing countries and the developed world (third and fourth cancer respectively).[13]

The majority of patients were referred from surgery and medicine sections indicating a low uptake of colonic cancer screening. Screening for colorectal cancer reduced colonic cancer and mortality in particular among men,[14] the Saudi guidelines strongly recommended screening for colorectal cancer among asymptomatic average-risk patients 45 to 70 years of age. Colonoscopy and flexible sigmoidoscopy are strongly recommended over Computed Colonoscopy.[15] For early detection and treatment, Tabuk City needs to increase public knowledge about colorectal cancer screening. Prior research found that Saudi Arabians possessed an inadequate understanding of colorectal screening. In Saudi Arabia, worries about colonoscopy were identified as a significant obstacle to colorectal screening.[3] In the present study, adenocarcinoma was the most common histopathological pattern in line with Alharbi *et al.* [16] who conducted a study in the North of Saudi Arabia and reported adenocarcinoma in 72%. However, Alharbi and colleagues found 8% carcinoma in situ contradicting our findings in which carcinoma in situ was reported in 84.8% of the samples. The observation of a ten-fold increase in colonic cancer during the period from 1990

to 2016 is alarming;[17] a sedentary lifestyle and consumption of a Westernized diet rich in processed food are to blame. To use the experience of the USA and Europe, more research is required to understand the rising incidence of colonic cancer in Saudi Arabia, the dropping rate in the USA, and the steady state seen in Europe.[18] Cancer projection by the year 2025 is expected to reach 151,719 cases and 30,718 are expected to die.[19] Urgent interventional and preventive measures are needed to assess the risk factors. A multidisciplinary national cancer control policy is urgently recommended. The higher colorectal cancer among males in this data supported Almatroudi's analysis which concluded the higher rate of colorectal cancer among men, Almatoudi observed a higher percentage of elderly males in line with the current findings in which 77.8% of women were < 60 years of age. The spatial and temporal profile of colonic cancer is not uniform in the Kingdom of Saudi Arabia, the most relevant observation was obesity which was high among regions with the highest colorectal cancer and low in regions with low incidence.[20] Other factors might be exposure to air pollution due to industry,[21] and severe vitamin D deficiency which was shown in 83.6% of the Arab World.[22, 23] A healthy lifestyle, dietary supplements, and screening for colorectal cancer among young age groups might help reduce the incidence and mortality.[24-26] Interestingly, the patients with colorectal cancer were younger compared to their counterparts in the USA. However, females in Saudi Arabia were diagnosed earlier than males in contradiction to the United States in which males were diagnosed at an earlier time. A plausible explanation might be that Saudi females seek medical advice earlier than men do.[27]

In the present study, rectal carcinoma was found in 19.6%, which was lower than the findings of a study published in Western Saudi Arabia and reported a rate of 32.2%.[28] Previous studies published a decade ago showed right colonic cancer in 16.9%,[29] the current data showed that 39.1% of colonic cancer affected the right side indicating a trend towards proximal shift, our data were different from the findings reported 30 years before in a tertiary care hospital in Riyadh, Saudi Arabia.[30] A study published in the Western region found rectal cancer in 37.8% which was higher than the current findings.[31] In addition, the researchers observed stages 0, 1, II, III, and IV among 2.7%, 11.7%, 23.4%, and 20.7% respectively, in this study, 56.5% were stage II, and stage I and III represent 6.5%, and 4.4 respectively. The issue of colonic cancer sites is a great matter of debate. However, most studies pointed out that left and right-sided colonic cancer are different entities in chemotherapeutic response, presentation, and carcinogenic pathways.[32] However, the effect of site on prognosis is contradicting.[33-35]

The study limitations were the small sample size, retrospective methods, and being a single-center study.

Conclusion

Colorectal cancer was the second most common cancer in Tabuk City, Saudi Arabia. The patients were younger and a tendency towards proximal shift (right-sided) was observed. The proximal shift is in agreement with the pattern observed in Western countries and needs colonoscopy for screening.[36] plausible explanation for the right-sided shift might be the improvement in diagnostic methods and aging.[37] Males were more affected than females, females presented at a young age. Adenocarcinoma was the commonest histopathological finding, the majority were carcinoma in situ, and stage II was the commonest presentation.

Acknowledgments

None.

Conflict of interest

None.

Financial support

None.

Ethics statement

The author strictly adheres to the Helsinki Declaration. All the information was anonymous; no private information was taken. Ethical clearance was obtained from the ethical committee of the University of Tabuk in Tabuk City, Saudi Arabia with reference number UT-282-125-2023.

References

1. Sindhu CK, Nijar AK, Leong PY, Li ZQ, Hong CY, Malar L, et al. Awareness of colorectal cancer among the urban population in the klang valley. Malays Fam Physician. 2019;14(3):18-27. Available from: https://e-mfp.org/wp-content/uploads/2019/12/v14n3-original-article-3.pdf
2. Elwali NE, Jarrah O, Alzahrani SG, Alharbi MB, Alhejaily AG, Alsharm AA, et al. Colorectal cancer in Saudi Arabia: The way forward. Asian Pac J Cancer Prev. 2023;24(1):13-9. doi:10.31557/APJCP.2023.24.1.13
3. Alzahrani KM, Fallatah SM, Almehmadi RA, Alghamdi JS, Alsulaimani AI, Alkhaldi LM, et al. Colorectal cancer and its screening among public in the western region of Saudi Arabia. Cureus. 2022;14(7):e27404. doi:10.7759/cureus.27404
4. Keum N, Giovannucci E. Global burden of colorectal cancer: Emerging trends, risk factors and prevention strategies. Nat Rev Gastroenterol Hepatol. 2019;16(12):713-32. doi:10.1038/s41575-019-0189-8
5. Hamza A, Argaw Z, Gela D. Awareness of colorectal cancer and associated factors among adult patients in Jimma, South-West Ethiopia: An institution-based cross-sectional study. Cancer Control. 2021;28:10732748211033550. doi:10.1177/10732748211033550
6. Kim SE, Paik HY, Yoon H, Lee JE, Kim N, Sung MK. Sex- and gender-specific disparities in colorectal cancer risk. World J Gastroenterol. 2015;21(17):5167-75. doi:10.3748/wjg.v21.i17.5167
7. Yang Y, Wang G, He J, Ren S, Wu F, Zhang J, et al. Gender differences in colorectal cancer survival: A meta-analysis. Int J Cancer. 2017;141(10):1942-9. doi:10.1002/ijc.30827
8. Höffken N, Leichsenring J, Reinacher-Schick A. Clinically relevant, gender-specific differences in colorectal carcinoma (CRC). Z Gastroenterol. 2015;53(8):782-8. [German]. doi:10.1055/s-0035-1553476
9. Abotchie PN, Vernon SW, Du XL. Gender differences in colorectal cancer incidence in the United States, 1975-2006. J Womens Health (Larchmt). 2012;21(4):393-400. doi:10.1089/jwh.2011.2992
10. Chen TA, Kang HY, Chang HC, Lin WC, Chao TM, Horng JT. Gender differences in colorectal cancer during the past 20 years in Taiwan. Int J Colorectal Dis. 2012;27(3):345-53. doi:10.1007/s00384-011-1318-1
11. Koo JH, Leong RW. Sex differences in epidemiological, clinical and pathological characteristics of colorectal cancer. J Gastroenterol Hepatol. 2010;25(1):33-42. doi:10.1111/j.1440-1746.2009.05992.x

12. Alsanea N, Abduljabbar AS, Alhomoud S, Ashari LH, Hibbert D, Bazarbashi S. Colorectal cancer in Saudi Arabia: Incidence, survival, demographics and implications for national policies. Ann Saudi Med. 2015;35(3):196-202. doi:10.5144/0256-4947.2015.196
13. Jemal A, Bray F, Center MM, Ferlay J, Ward E, Forman D. Global cancer statistics. CA Cancer J Clin. 2011;61(2):69-90. doi:10.3322/caac.20107. Epub 2011 Feb 4. Erratum in: CA Cancer J Clin. 2011;61(2):134.
14. Jodal HC, Helsingen LM, Anderson JC, Lytvyn L, Vandvik PO, Emilsson L. Colorectal cancer screening with faecal testing, sigmoidoscopy or colonoscopy: A systematic review and network meta-analysis. BMJ Open. 2019;9(10):e032773. doi:10.1136/bmjopen-2019-032773
15. Alsanea N, Almadi MA, Abduljabbar AS, Alhomoud S, Alshaban TA, Alsuhaibani A, et al. National guidelines for colorectal cancer screening in Saudi Arabia with strength of recommendations and quality of evidence. Ann Saudi Med. 2015;35(3):189-95. doi:10.5144/0256-4947.2015.189
16. Alharbi SH, Alshammari KI, Alanazi KK, Ahmed HG. Patterns and grades of presentation of colon cancer in Northern Saudi Arabia. Prz Gastroenterol. 2021;16(3):235-9. doi:10.5114/pg.2021.104168
17. Althubiti MA, Nour Eldein MM. Trends in the incidence and mortality of cancer in Saudi Arabia. Saudi Med J. 2018;39(12):1259-62. doi:10.15537/smj.2018.12.23348
18. Jemal A, Thun MJ, Ries LA, Howe HL, Weir HK, Center MM, et al. Annual report to the nation on the status of cancer, 1975-2005, featuring trends in lung cancer, tobacco use, and tobacco control. J Natl Cancer Inst. 2008;100(23):1672-94. doi:10.1093/jnci/djn389
19. Alattas MT. Cancer control priorities and challenges in Saudi Arabia: A preliminary projection of cancer burden. Gulf J Oncolog. 2019;1(29):22-30.
20. Almatroudi A. The incidence rate of colorectal cancer in Saudi Arabia: An observational descriptive epidemiological analysis. Int J Gen Med. 2020;13:977-90. doi:10.2147/IJGM.S277272
21. Saad MA. A review of prevalence of obesity in Saudi Arabia. J Prevalence Obes Saudi Arabia. 2016;2:2-25.
22. Al-Ahmadi K, Al-Zahrani A. NO(2) and cancer incidence in Saudi Arabia. Int J Environ Res Public Health. 2013;10(11):5844-62. doi:10.3390/ijerph10115844
23. Hussain AN, Alkhenizan AH, El Shaker M, Raef H, Gabr A. Increasing trends and significance of hypovitaminosis D: A population-based study in the Kingdom of Saudi Arabia. Arch Osteoporos. 2014;9:190. doi:10.1007/s11657-014-0190-3
24. Drew DA, Cao Y, Chan AT. Aspirin and colorectal cancer: The promise of precision chemoprevention. Nat Rev Cancer. 2016;16(3):173-86. doi:10.1038/nrc.2016.4
25. Heine-Bröring RC, Winkels RM, Renkema JM, Kragt L, van Orten-Luiten AC, Tigchelaar EF, et al. Dietary supplement use and colorectal cancer risk: A Systematic review and meta-analyses of prospective cohort studies. Int J Cancer. 2015;136(10):2388-401. doi:10.1002/ijc.29277
26. Bishehsari F, Mahdavinia M, Vacca M, Malekzadeh R, Mariani-Costantini R. Epidemiological transition of colorectal cancer in developing countries: environmental factors, molecular pathways, and opportunities for prevention. World J Gastroenterol. 2014;20(20):6055. doi:10.3748/wjg.v20.i20.6055
27. Patel SG, May FP, Anderson JC, Burke CA, Dominitz JA, Gross SA, et al. Updates on age to start and stop colorectal cancer screening: Recommendations from the U.S. multi-society task force on colorectal cancer. Am J Gastroenterol. 2022;117(1):57-69. doi:10.14309/ajg.0000000000001548
28. Elsamany SA, Alzahrani AS, Mohamed MM, Elmorsy SA, Zekri JE, Al-Shehri AS, et al. Clinico-pathological patterns and survival outcome of colorectal cancer in young patients: western Saudi Arabia experience. Asian Pac J Cancer Prev. 2014;15(13):5239-43. doi:10.7314/apjcp.2014.15.13.5239
29. Amin TT, Suleman W, Al Taissan AA, Al Joher AL, Al Mulhim O, Al Yousef AH. Patients' profile, clinical presentations and histopathological features of colo-rectal cancer in Al Hassa region, Saudi Arabia. Asian Pac J Cancer Prev. 2012;13(1):211-6. doi:10.7314/apjcp.2012.13.1.211
30. Isbister WH. Sex and subsite frequency of large bowel cancer in the Kingdom of Saudi Arabia: a comparison with New Zealand. Aust N Z J Surg. 1992;62(5):350-3. doi:10.1111/j.1445-2197.1992.tb07202.x
31. Al-Ahwal MS, Abdo Al-Ghamdi A. Pattern of colorectal cancer at two hospitals in the western region of Saudi Arabia. Saudi J Gastroenterol. 2005;11(3):164-9. doi:10.4103/1319-3767.33320
32. Lee GH, Malietzis G, Askari A, Bernardo D, Al-Hassi HO, Clark SK. Is right-sided colon cancer different to left-sided colorectal cancer? A systematic review. Eur J Surg Oncol. 2015;41(3):300-8. doi:10.1016/j.ejso.2014.11.001
33. Klose J, Kloor M, Warschkow R, Antony P, Liesenfeld LF, Büchler MW, et al. Does side really matter? Survival analysis among patients with right-versus left-sided colon cancer: A propensity score-adjusted analysis. Ann Surg Oncol. 2021;28:2768-78. doi:10.1245/s10434-020-09116-y
34. Livingston AJ, Bailey CE. Invited editorial: Does side really matter? Survival analysis among patients with right- versus left-sided colon cancer: A propensity score-adjusted analysis. Ann Surg Oncol. 2022;29(1):9-10. doi:10.1245/s10434-020-09522-2
35. Baran B, Ozupek NM, Tetik NY, Acar E, Bekcioglu O, Baskin Y. Difference between left-sided and right-sided colorectal cancer: A focused review of literature. Gastroenterol Res. 2018;11(4):264-73. doi:10.14740/gr1062w
36. Papagiorgis PC, Oikonomakis I, Delaportas D, Myoteri D, Arkoumani E, Thalassinos N, et al. Proximal shift of colorectal cancer. A persistent phenomenon with multiple causes, patterns and clinical implications. J BUON. 2014;19(3):605-17.
37. Del Rio P, Rossini M, Giuffrida M, Cozzani F, Guarnieri E, Dell'Abate P. Rightward shift in colorectal cancer: experience in 1101 patients. Minerva Chir. 2020;75(4):225-33. doi:10.23736/S0026-4733.20.08263-2